

DATA ITEM DESCRIPTION			
1. TITLE  <b>SOFTWARE DEVELOPMENT PLAN (SDP)</b>		2. IDENTIFICATION NUMBER  <b>DID-FAA-STD-026-01</b>	
3. DESCRIPTION/PURPOSE  <p>3.1 The Software Development Plan (SDP) describes a developer's plans for conducting a software development effort. The term "software development" in this DID is meant to include new development, modification, reuse, reengineering, maintenance, and all other activities resulting in software products.</p> <p>3.2 The SDP provides the acquirer insight into, and a tool for monitoring, the processes to be followed for software development, the methods to be used, the approach to be followed for each activity, and project schedules, organization, and resources.</p>			
4. APPROVAL DATE August 11, 2000	5. OFFICE OF PRIMARY RESPONSIBILITY <b>AIO-2/ASU-500</b>	6a. DTIC APPLICABLE N/A	6b. GIDEP APPLICABLE N/A
7. APPLICATION/INTERRELATIONSHIP  <p>7.1 This Data Item Description (DID) contains the format and content preparation instructions for the data product generated by specific and discrete task requirements as delineated in the contract.</p> <p>7.2 This DID is used when the developer is tasked to develop and record plans for conducting software development activities.</p> <p>7.3 Portions of this plan may be bound separately if this approach enhances their usability. Examples include plans for software configuration management and software quality assurance.</p> <p>7.4 The Contract Data Requirements List (CDRL) (DD 1423 or equivalent) should specify whether deliverable data are to be delivered on paper or electronic media; are to be in a given electronic form (such as ASCII, CALS, or compatible with a specified word processor or other support software); may be delivered in developer format rather than in the format specified herein; and may reside in a computer-aided software engineering (CASE) or other automated tool rather than in the form of a traditional document.</p>			
8. APPROVAL LIMITATION None	9a. APPLICABLE FORMS FAA-STD-026	9b. AMSC NUMBER N/A	
10. PREPARATION INSTRUCTIONS  <p>10.1 <u>General instructions.</u></p> <p>a. <u>Automated techniques.</u> Use of automated techniques is encouraged. The term "document" in this DID means a collection of data regardless of its medium.</p> <p>b. <u>Alternate presentation styles.</u> Diagrams, tables, matrices, and other presentation styles are acceptable substitutes for text when data required by this DID can be made more readable using these styles.</p> <p style="text-align: right;">(Continued on Page 2)</p>			
11. DISTRIBUTION STATEMENT  DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.			

## 10. PREPARATION INSTRUCTIONS -- 10.1 General Instructions (continued)

- c. Title page or identifier. The document shall include a title page containing, as applicable: document number; volume number; version/revision indicator; security markings or other restrictions on the handling of the document; date; document title; name, abbreviation, and any other identifier for the system, subsystem, or item to which the document applies; contract number; CDRL item number; organization for which the document has been prepared; name and address of the preparing organization; and distribution statement. For data in a database or other alternative form, this information shall be included on external and internal labels or by equivalent identification methods.
- d. Table of contents. The document shall contain a table of contents providing the number, title, and page number of each titled paragraph, figure, table, and appendix. For data in a database or other alternative form, this information shall consist of an internal or external table of contents containing pointers to, or instructions for accessing, each paragraph, figure, table, and appendix or their equivalents.
- e. Page numbering/labeling. Each page shall contain a unique page number and display the document number, including version, volume, and date, as applicable. For data in a database or other alternative form, files, screens, or other entities shall be assigned names or numbers in such a way that desired data can be indexed and accessed.
- f. Response to tailoring instructions. If a paragraph is tailored out of this DID, the resulting document shall contain the corresponding paragraph number and title, followed by "This paragraph has been tailored out." For data in a database or other alternative form, this representation need occur only in the table of contents or equivalent.
- g. Multiple paragraphs and subparagraphs. Any section, paragraph, or subparagraph in this DID may be written as multiple paragraphs or subparagraphs to enhance readability.
- h. Standard data descriptions. If a data description required by this DID has been published in a standard data element dictionary specified in the contract, reference to an entry in that dictionary is preferred over including the description itself.
- i. Substitution of existing documents. Commercial or other existing documents, including other project plans, may be substituted for all or part of the document if they contain the required data.

10.2 Content requirements. Content requirements begin on the following page. The numbers shown designate the paragraph numbers to be used in the document. Each such number is understood to have the prefix "10.2" within this DID. For example, the paragraph numbered 1.1 is understood to be paragraph 10.2.1.1 within this DID.

## 10. PREPARATION INSTRUCTIONS – 10.2 Content Requirements (continued)

1. Scope. This section shall be divided into the following paragraphs.

1.1 Identification. This paragraph shall contain a full identification of the system and the software to which this document applies, including, as applicable, identification number(s), title(s), abbreviation(s), version number(s), and release number(s).

1.2 System overview. This paragraph shall briefly state the purpose of the system and the software to which this document applies. It shall describe the general nature of the system and software; summarize the history of system development, operation, and maintenance; identify the project sponsor, acquirer, user, developer, and support organization; identify current and planned operating sites; and list other relevant documents.

1.3 Document overview. This paragraph shall summarize the purpose and contents of this document and shall describe any security or privacy considerations associated with its use.

1.4 Relationship to other plans. This paragraph shall describe the relationship, if any, of the SDP to other project management plans.

2. Referenced documents. This section shall list the number, title, revision, and date of all documents referenced in this plan. This section shall also identify the source for all documents not available through normal Government stocking activities.

3. Overview of required work. This section shall be divided into paragraphs as needed to establish the context for the planning described in later sections. It shall include, as applicable, an overview of:

- a. Requirements and constraints on the system and software to be developed
- b. Requirements and constraints on project documentation
- c. Position of the project in the system life cycle
- d. The selected program/acquisition strategy or any requirements or constraints on it
- e. Requirements and constraints on project schedules and resources
- f. Other requirements and constraints, such as on project security, privacy, safety, methods, standards, interdependencies in hardware and software development, etc.

4. Plans for performing general software development activities. This section shall be divided into the following paragraphs. Provisions corresponding to non-required activities may be satisfied by the words "Not applicable." If different builds or different software on the project require different planning, these differences shall be noted in the paragraphs. In addition to the content specified below, each paragraph shall identify applicable risks/uncertainties and plans for dealing with them.

4.1 Software development strategy and schedule. This paragraph shall describe the strategy, as defined in the contract or selected appropriate to the scope, magnitude, and complexity of the project. A mapping of the activities and tasks of the development process onto the strategy model shall be provided, including schedule and resource loading. The methodology used for software estimation, including any tools utilized, shall be described. The planning

## 10. PREPARATION INSTRUCTIONS – 10.2 Content Requirements (continued)

shall cover all contractual clauses concerning this topic, identifying planned builds, if applicable, their objectives, and the software development activities to be performed in each build.

4.2 General plans for software development. This paragraph shall be divided into the following subparagraphs.

4.2.1 Software development methods and software products. This paragraph shall describe or reference the software development methods to be used, and describe or reference the standards to be followed for representing requirements, design, code, test cases, test procedures, and test results. Included shall be descriptions of the manual and automated tools and procedures to be used in support of these methods. The methods shall cover all contractual clauses concerning this topic. Reference may be made to other paragraphs in this plan if the methods are better described in context with the activities to which they will be applied.

- a) Description of methods used to allocate system requirements, to develop the software requirements, architecture, and design, including level of detail, and methods used to implement the source code and executable object code;
- b) Notations used to describe the system requirements and architecture;
- c) Notations used to describe the software requirements, architecture, design modules, design limitations, and code, including identification of the programming language(s) or subset used and reference to the definition of the language syntax, control and data behavior, and side-effects;
- d) Naming conventions for requirements, design, and source code, including executable object code files, and data;
- e) Methods of design and coding standards, and constraints on design and code constructs and expressions, including design and code complexity restrictions and quality criteria for assessing requirements and design data and code;
- f) Methods for ensuring that project participants understand software development issues and changes to requirements, design;
- g) Presentation conventions and content standards for requirements data, design data, source code and test data;
- h) Description of methods, tools and standards used to develop safety assurance software (if applicable);
- i) Description of methods, tools and standards used to develop security assurance software;
- j) Description of methods, tools and standards for software human factors;
- k) Description of methods and tools used to define traceability between system requirements, system architecture, software requirements, software architecture, design, code, and test elements;
- l) Description of methods, tools, and standards for testing.

4.2.2 Software Process Improvement Activities. This paragraph shall describe the methods to be used to identify improvement opportunities in software development practices and to identify any plans for increasing the level of maturity of contractor software development processes.

## 10. PREPARATION INSTRUCTIONS – 10.2 Content Requirements (continued)

4.2.3 Reusable software products. This paragraph shall be divided into the following subparagraphs.

4.2.3.1 Incorporating reusable software products. This paragraph shall describe the approach to be followed for identifying, evaluating, and incorporating reusable software products, including the scope of the search for such products and the criteria to be used for their evaluation. It shall cover all contractual clauses concerning this topic. Candidate or selected reusable software products known at the time this plan is prepared or updated shall be identified and described, together with benefits, drawbacks, and restrictions, as applicable, associated with their use.

4.2.3.2 Developing reusable software products. This paragraph shall describe the approach to be followed for identifying, evaluating, and reporting opportunities for developing reusable software products. It shall cover all contractual clauses concerning this topic.

4.2.4 Handling of critical requirements. This paragraph shall be divided into the following subparagraphs, as applicable, to describe the approach to be followed for handling requirements designated critical. The planning in each subparagraph shall cover all contractual clauses concerning the identified topic.

4.2.4.1 Safety assurance

4.2.4.2 Security assurance

4.2.4.3 Privacy assurance

4.2.4.4 Human Factors

4.2.4.5 Assurance of other critical requirements

4.2.5 Computer hardware resource utilization. This paragraph shall describe the approach to be followed for allocating computer hardware resources and monitoring their utilization. It shall cover all contractual clauses concerning this topic.

4.2.6 Recording rationale. This paragraph shall describe the approach to be followed for recording rationale that will be useful to the support agency for key decisions made on the project. The rationale should include trade-offs considered, analysis methods, and criteria used to make those decisions. It shall interpret the term "key decisions" for the project and state where the rationale are to be recorded. It shall cover all contractual clauses concerning this topic.

4.2.7 Access for acquirer review. This paragraph shall describe the approach to be followed for providing the acquirer or its authorized representative access to developer and subcontractor facilities for review of software products and activities. It shall cover all contractual clauses concerning this topic.

5. Plans for performing detailed software development activities. This section shall be divided into the following paragraphs. Provisions corresponding to non-required activities may be satisfied by the words "Not applicable." If different builds or different software on the project require different planning, these differences shall be noted in the paragraphs. The

## 10. PREPARATION INSTRUCTIONS – 10.2 Content Requirements (continued)

discussion of each activity shall include the approach (methods/procedures/tools) to be applied to: 1) the analysis or other technical tasks involved, 2) the recording of results, and 3) the preparation of associated deliverables, if applicable. The discussion shall also identify applicable risks/uncertainties and plans for dealing with them. Reference may be made to 4.2.1 if applicable methods are described there.

5.1 Project planning and oversight. This paragraph shall be divided into the following subparagraphs to describe the approach to be followed for project planning and oversight. The planning in each subparagraph shall cover all contractual clauses regarding the identified topic.

- 5.1.1 Software development planning (covering updates to this plan)
- 5.1.2 Software test planning
- 5.1.3 System test planning
- 5.1.4 Software installation planning
- 5.1.5 Software transition planning
- 5.1.6 Following and updating plans, including the intervals for management review

5.2 Establishing a software development environment. This paragraph shall be divided into the following subparagraphs to describe the approach to be followed for establishing, controlling, and maintaining a software development environment. The planning in each subparagraph shall cover all contractual clauses regarding the identified topic.

- 5.2.1 Software engineering environment
- 5.2.2 Software test environment
- 5.2.3 Software development library
- 5.2.4 Software development files
- 5.2.5 Non-deliverable software

5.3 System requirements analysis. This paragraph shall be divided into the following subparagraphs to describe the approach to be followed for participating in system requirements analysis. The planning in each subparagraph shall cover all contractual clauses regarding the identified topic.

- 5.3.1 Analysis of user input
- 5.3.2 Operational concept
- 5.3.3 System requirements

5.4 System design. This paragraph shall be divided into the following subparagraphs to describe the approach to be followed for participating in system design. The planning in each subparagraph shall cover all contractual clauses regarding the identified topic.

- 5.4.1 System-wide design decisions
- 5.4.2 System architectural design

5.5 Software requirements analysis. This paragraph shall describe the approach to be followed for software requirements analysis. The approach shall cover all contractual clauses concerning this topic.

## 10. PREPARATION INSTRUCTIONS – 10.2 Content Requirements (continued)

5.6 Software architectural design. This paragraph shall be divided into the following subparagraphs to describe the approach to be followed for software design of each software item (or software configuration item, if identified). The planning in each subparagraph shall cover all contractual clauses regarding the identified topic.

- 5.6.1 Software design decisions
- 5.6.2 Software top-level architectural design

5.7 Software detailed design. This paragraph shall describe the approach to be followed for software detailed design.

5.8 Software coding and testing. This paragraph shall be divided into the following subparagraphs to describe the approach to be followed for software coding and testing. The planning in each subparagraph shall cover all contractual clauses regarding the identified topic.

- 5.7.1 Software implementation
- 5.7.2 Preparing for unit testing
- 5.7.3 Performing unit testing
- 5.7.4 Revision and retesting
- 5.7.5 Analyzing and recording unit test results

5.8 Software integration. This paragraph shall be divided into the following subparagraphs to describe the approach to be followed to integrate the software units and software components into the software item. The planning in each subparagraph shall cover all contractual clauses regarding the identified topic.

- 5.8.1 Preparing the software integration plan including
  - description of the test environment
  - test requirements
  - test procedures
  - test data recording and analysis
  - responsibilities
  - schedule
- 5.8.2 Performing software integration
- 5.8.3 Revision and retesting
- 5.8.4 Analyzing and recording software integration and test results

## 10. PREPARATION INSTRUCTIONS – 10.2 Content Requirements (continued)

5.9 Software qualification testing. This paragraph shall be divided into the following subparagraphs to describe the approach to be followed for software qualification testing. The planning in each subparagraph shall cover all contractual clauses regarding the identified topic.

- 5.9.1 Independence in CSCI qualification testing
- 5.9.2 Testing on the target computer system
- 5.9.3 Preparing for software qualification testing
- 5.9.4 Dry run of software qualification testing
- 5.9.5 Performing software qualification testing
- 5.9.6 Revision and retesting
- 5.9.7 Analyzing and recording software qualification test results

5.10 System integration. This paragraph shall be divided into the following subparagraphs to describe the approach to be followed for participating in system integration. The planning in each subparagraph shall cover all contractual clauses regarding the identified topic.

- 5.10.1 Testing on the target computer system
- 5.10.2 Preparing for system integration and testing
- 5.10.3 Performing system integration and testing
- 5.10.4 Revision and retesting
- 5.10.5 Analyzing and recording system integration and test results

5.11 System qualification testing. This paragraph shall be divided into the following subparagraphs to describe the approach to be followed for participating in system qualification testing. The planning in each subparagraph shall cover all contractual clauses regarding the identified topic.

- 5.11.1 Independence in system qualification testing
- 5.11.2 Testing on the target computer system
- 5.11.3 Preparing for system qualification testing
- 5.11.4 Dry run of system qualification testing
- 5.11.5 Performing system qualification testing
- 5.11.6 Revision and retesting
- 5.11.7 Analyzing and recording system qualification test results

5.12 Preparing for software use. This paragraph shall be divided into the following subparagraphs to describe the approach to be followed for preparing for software use. The planning in each subparagraph shall cover all contractual clauses regarding the identified topic.

- 5.12.1 Preparing the executable software
- 5.12.2 Preparing version descriptions for user sites
- 5.12.3 Preparing user manuals
- 5.12.4 Installation at user sites



## 10. PREPARATION INSTRUCTIONS – 10.2 Content Requirements (continued)

5.13 Preparing for software transition. This paragraph shall be divided into the following subparagraphs to describe the approach to be followed for preparing for software transition. The planning in each subparagraph shall cover all contractual clauses regarding the identified topic. If part or all of this information is provided elsewhere, the source(s) may be referenced.

- 5.13.1 Preparing the executable software
- 5.13.2 Preparing source files
- 5.13.3 Preparing version descriptions for the support site
- 5.13.4 Preparing the "as built" software design and other software support information
- 5.13.5 Updating the system design description
- 5.13.6 Preparing support manuals
- 5.13.7 Transition to the designated support site

5.14 Software configuration management. This paragraph shall be divided into the following subparagraphs to describe the approach to be followed for software configuration management. The planning in each subparagraph shall cover all contractual clauses regarding the identified topic. If part or all of this information is provided elsewhere, the source(s) may be referenced.

- 5.14.1 Configuration identification
- 5.14.2 Configuration control
- 5.14.3 Configuration status accounting
- 5.14.4 Configuration audits
- 5.14.5 Packaging, storage, handling, and delivery

5.15 Software product evaluation. This paragraph shall be divided into the following subparagraphs to describe the approach to be followed for software product evaluation. The planning in each subparagraph shall cover all contractual clauses regarding the identified topic. If part or all of this information is provided elsewhere, the source(s) may be referenced.

- 5.15.1 In-process and final software product evaluations
- 5.15.2 Software product evaluation records, including items to be recorded
- 5.15.3 Independence in software product evaluation

5.16 Software quality assurance. This paragraph shall be divided into the following subparagraphs to describe the approach to be followed for software quality assurance. The planning in each subparagraph shall cover all contractual clauses regarding the identified topic. If part or all of this information is provided elsewhere, the source(s) may be referenced.

- 5.16.1 Software quality assurance evaluations
- 5.16.2 Software quality assurance records, including items to be recorded
- 5.16.3 Independence in software quality assurance

## 10. PREPARATION INSTRUCTIONS – 10.2 Content Requirements (continued)

5.17 Corrective action. This paragraph shall be divided into the following subparagraphs to describe the approach to be followed for corrective action. The planning in each subparagraph shall cover all contractual clauses regarding the identified topic. If part or all of this information is provided elsewhere, the source(s) may be referenced.

5.17.1 Problem/change reports, including items to be recorded (candidate items include project name, originator, problem number, problem name, software element or document affected, origination date, category and priority, description, analyst assigned to the problem, date assigned, date completed, analysis time, recommended solution, impacts, problem status, approval of solution, follow-up actions, corrector, correction date, version where corrected, correction time, description of solution implemented)

5.17.2 Corrective action system

5.18 Joint technical and management reviews. This paragraph shall be divided into the following subparagraphs to describe the approach to be followed for joint technical and management reviews. The planning in each subparagraph shall cover all contractual clauses regarding the identified topic.

5.18.1 Joint technical reviews

5.18.2 Joint management reviews

5.19 Other software development activities. This paragraph shall be divided into the following subparagraphs to describe the approach to be followed for other software development activities. The planning in each subparagraph shall cover all contractual clauses regarding the identified topic.

5.19.1 Risk management, including known risks and corresponding strategies

5.19.2 Software management indicators, including indicators to be used

5.19.3 Security and privacy

5.19.4 Subcontractor management

5.19.5 Interface with software independent verification and validation (IV&V) agents

5.19.6 Coordination with associate developers

5.19.7 Improvement of project processes

5.19.8 Other activities not covered elsewhere in the plan

6. Schedules and activity network. This section shall present:

- a. Schedule(s) identifying the activities in each build and showing initiation of each activity, availability of draft and final deliverables and other milestones, and completion of each activity
- b. An activity network, depicting sequential relationships and dependencies among activities and identifying those activities that impose the greatest time restrictions on the project

## 10. PREPARATION INSTRUCTIONS – 10.2 Content Requirements (continued)

7. Project organization and resources. This section shall be divided into the following paragraphs to describe the project organization and resources to be applied in each build.

7.1 Project organization. This paragraph shall describe the organizational structure to be used on the project, including the organizations involved, their relationships to one another, and the authority and responsibility of each organization for carrying out required activities.

7.2 Project resources. This paragraph shall describe the resources to be applied to the project. It shall include, as applicable:

- a. Personnel resources, including:
  - 1) The estimated staff-loading for the project (number of personnel over time)
  - 2) The breakdown of the staff-loading numbers by responsibility (for example, management, software engineering, software testing, software configuration management, software product evaluation, software quality assurance)
  - 3) A breakdown of the skill levels, geographic locations, and security clearances of personnel performing each responsibility
  - 4) Training requirements by responsibility along with a plan for obtaining and ensuring training
- b. Overview of developer facilities to be used, including geographic locations in which the work will be performed, facilities to be used, and secure areas and other features of the facilities as applicable to the contracted effort.
- c. Acquirer-furnished equipment, software, services, documentation, data, and facilities required for the contracted effort. A schedule detailing when these items will be needed shall also be included.
- d. Other required resources, including a plan for obtaining the resources, dates needed, and availability of each resource item.

8. Notes. This section shall contain any general information that aids in understanding this document (e.g., background information, glossary, rationale). This section shall include an alphabetical listing of all acronyms, abbreviations, and their meanings as used in this document and a list of any terms and definitions needed to understand this document.

A. Appendixes. Appendixes may be used to provide information published separately for convenience in document maintenance (e.g., charts, classified data). As applicable, each appendix shall be referenced in the main body of the document where the data would normally have been provided. Appendixes may be bound as separate documents for ease in handling. Appendixes shall be lettered alphabetically (A, B, etc.).

